

Authors

Roger T. Bell

European Organization for Nuclear Research (CERN), Geneva, Switzerland

B.Sc. in Statistics, 1962, University of Liverpool. Joined CEIR (U. K.) Ltd., (now Scientific Control Systems Ltd.) to work in the mathematical programming group. With CERN since February, 1964 in the data-handling group of the Nuclear Physics Division, studying problems associated with data handling techniques for counter experiments and the application of computers on-line to experiments.

Phillip R. Bevington

Case Western Reserve University, Cleveland, Ohio

A.B. in Mathematics, 1954, Harvard U.; Ph. D. in Physics, 1960, Duke University. Was Research Associate at Duke 1959-63, Instructor at Duke 1958-61, and Assistant Professor at Duke 1961-63. Was Assistant Professor at Stanford U. 1963-68, doing research in nuclear physics with 18 MeV Van de Graaff accelerator. Developed SCANS computational system at Stanford for acquisition, reduction, and analysis of nuclear data in real time. Joined Physics Department of Case Western Reserve as Associate Professor in 1968. He continues research with Van de Graaff accelerators and maintains a professional interest in computational methods in nuclear physics. Member, Phi Beta Kappa, Sigma Xi, American Institute of Physics, and Meetings Chairman of Digital Equipment Computer Users Society.

Joel S. Birnbaum

Thomas J. Watson Research Center, Yorktown Heights, New York

B. E. P. in Engineering Physics, 1960, Cornell University; M.S. in Physics, 1961, Yale University; Ph.D. in Physics, 1965, Yale University. Joined IBM Research at Yorktown in 1965 to work on the design and development of a Nuclear Physics Data Acquisition system in a joint study with Yale University. Assumed present position as Manager, Computer Assisted Laboratory Experimentation, in 1967. This group is performing fundamental research into the nature of on-line data acquisition and control in a multiple laboratory environment. Member, American Physical Society and Sigma Xi.

J. J. Byerley

University of Waterloo, Waterloo, Ontario

B.A.Sc. in Metallurgical Engineering, 1958, U. of Toronto; M.A.Sc. in Metallurgical Engineering, 1959, U. of Toronto; Ph.D. in Chemical Metallurgy, 1963, U. of British Columbia. Was Research Associate at U. of Toronto 1959-60 and Research Fellow at U. of British Columbia 1963-65. In 1965 was appointed to the faculty in the Department of Chemical Engineering, University of Waterloo, to begin a chemical metallurgy group within this Department. He is now an Associate Professor. His major area of research lies in the kinetics and mechanisms of hydrometallurgical processes. Member, American Institute of Mining, Metallurgical, and Petroleum Engineers.

Frank P. Carrubba

Thomas J. Watson Research Center, Yorktown Heights, New York

Graduate of Connecticut School of Engineering. Joined IBM at New Haven in 1960. As a member of the Field Engineering Division worked on a variety of machines in the IBM product line, specializing in the 1400 and 7000 family of computers. Promoted to Senior Field Engineer in 1966 and served as area specialist on the IBM System 360/44. In 1967 was assigned to Yale University as part of a joint study program between Yale and IBM Research. In 1968 was promoted to Field Engineering Specialist and transferred to the IBM Research Division where he assumed his present position as a research associate working on problems in the area of computerized laboratory automation. Presently attending New Haven College. Member, IEEE.

Louis D. Coffin

Systems Development Division, Boulder, Colorado

B. A. in Education, 1951, U. of Wyoming; M.S. in Mathematics, 1960, U. of Wyoming. Was Instructor in the Mathematics Department at Washington State University during the academic year 1960-1961. Joined G.E. in 1961 at Richland, Washington, and began work in mathematical programming. Worked with computers in the Process Control field from 1963 to 1968. Transferred to Battelle-Northwest Laboratory in 1965 and worked on the on-line analysis of multi-component spectra and programmed measurement for a nuclear test reactor. Joined IBM at Boulder in early 1968 and in August, 1968, assumed his present job of directing SDD Programming, Training and Development. Member of ACM and the special interest group for CAI.

Henderson Cole

Thomas J. Watson Research Center, Yorktown Heights, New York

B.S. in Physics, 1950, M.I.T.; Ph.D. in Physics, 1952, M.I.T.; Fulbright Fellow, 1953, College de France, Paris. Instructor in the Physics Department, M.I.T., to 1955. Joined IBM Research in Poughkeepsie, 1955, to do research in x-ray diffraction physics and set up general support diffraction facilities. Research interests in lattice vibrations and perfect crystal diffraction effects. Group expanded to include crystallography, and in 1963, after move to new lab in Yorktown Heights, a fully computer-controlled x-ray diffractometer was put into service for crystallographic data-taking. A second project, in lab automation, followed, which involved extensive interactions with Stanford University; with NASA Mars probe and NIH structure system, in cooperation with the Federal Systems Division; and the Data Processing Division. Member, American Crystallographic Association and Fellow, American Physical Society.

Jonathan B. Davis

Thomas J. Watson Research Center, Yorktown Heights, New York

Attended Westchester Community College, Valhalla, New York and University of Bridgeport, Connecticut, taking courses leading to B.S.E.E. Joined IBM in 1956 at the Poughkeepsie Plant, where he served as Data Processing Customer Engineer. Transferred to Garden City, New York in 1958 to serve outside customers on Long Island. Came to IBM Research, Mohansic Laboratory, in 1960 to work on the Lexical Processing Effort for U.S.A.F.; was responsible for design and construction of input/output equipment for the IBM Russian translator demonstration at the New York World's Fair. Has been working on design, construction, and operation of lens measurement equipment since 1962. His other present responsibilities involve installation, maintenance, modification, and programming of the IBM 1620 system, and pattern recognition and synthetic aperture optics programming.

Thomas Z. Fahidy

University of Waterloo, Waterloo, Ontario, Canada

B.Sc., 1959; M.Sc., 1961, in Chemical Engineering, Queen's University; Ph.D. in Chemical Engineering, 1965, University of Illinois. Joined University of Waterloo in 1964 as Assistant Professor; at present, Associate Professor in Department of Chemical Engineering. Has been active in application of digital simulation to chemical engineering problems. Main areas of interest are process dynamics, control theory and mathematical modelling. Member of SCI, AIChE, CIC, Sigma Xi; Shell Visiting Fellow at University College London during the 1968-69 academic year.

Kenneth L. Foster

Research Division, San Jose, California

A.A. in General Engineering, 1958, Taft College; attended San Jose State College. Formerly associated with Lockheed Missile and Space Division, Sunnyvale, as a Designer for Projects in Ground Support Equipment. Joined IBM Research in 1965 as a Research Technician, assigned to work on various projects in Spin Systems. Currently Senior Research Assistant assigned to projects in laser and conventional spectroscopy and laboratory automation.

James W. Fryklund

Oregon State University, Corvallis, Oregon

B.S. in Physics, 1963, University of Minnesota; did graduate work at the University of Colorado 1963-1965; is now a graduate student in Electronics Engineering at Oregon State University. Was a Computer Analyst at the Martin Company, 1963-1965, and Research Engineer at the Boeing Company, 1965-1968. Joined the staff of the OSU Computer Center, where he is now Manager of On-line Hardware and Software Development. Present interests include the design of on-line hardware and software systems.

Henry M. Gladney

Corporate Headquarters, Armonk, New York

B.A. in Physics and Chemistry, 1960, University of Toronto; A.M., 1962, and Ph.D., 1963, both in Chemistry, Princeton University. Held the Porter Ogden Jacobus Fellowship, 1962-63, Princeton University. Joined the Physics Department at the IBM Research Laboratory in San Jose in 1963, to work in theoretical chemistry concerned with the description of chemical bonding in small molecules. Worked on

semiempirical theory of benzenoid hydrocarbons, atomic correlation energies, and analysis of spectra. Interests also involved the EPR and chemical bonding of transition metal fluorides. Currently located at Corporate Headquarters as Technical Advisor to the Vice President and Chief Scientist. Member, Sigma Xi.

Paul M. Grant

Research Division, San Jose, California

B.S. in Electrical Engineering, 1960, Clarkson College of Technology; A.M. in Applied Physics, 1961, Harvard; Ph.D. in Applied Physics, 1965, Harvard. Was Research Associate at Harvard in 1965. Joined IBM Poughkeepsie in 1953 as a mail clerk. Promoted to Laboratory Technician in 1954 and later that year attended first SAGE Field Engineering Class in Poughkeepsie. Was transferred in 1955 to Lincoln Laboratory to work as field engineer and reliability and diagnostic programmer on the SAGE AN/FSQ-7, XD1 installation. Obtained Educational Leave of Absence in 1956 to attend undergraduate school returning each summer to work in the Federal Systems Division Development Laboratory, Kingston, N. Y. Was Awarded IBM Resident Study Fellowship in 1960 by the Federal Systems Division and attended Harvard University; majored in Applied Physics and did his doctoral research on the optical properties of single crystal germanium films. Joined the Inorganic Materials Science Group of the IBM San Jose Research Laboratory in 1965, where he is now studying the optical properties of magnetic insulators in the intrinsic absorption region. He maintains a subsidiary interest in the problems of computational physics and computer systems. Member, American Institute of Physics, Tau Beta Pi, Eta Kappa Nu, and Sigma Xi.

David M. Hannon

Research Division, San Jose, California

B.S. in Electrical Engineering, 1957, Lowell Technological Institute. M.A. in Applied Physics, 1961, Harvard; Ph.D. in Applied Physics, 1966, Harvard. Joined IBM Research in San Jose in 1966 to work on optical properties of solids. Member, American Physical Society.

Harold H. Herd

Thomas J. Watson Research Center, Yorktown Heights, New York

M.S. in Physical Chemistry, 1942, University of British Columbia; pursued further graduate work in the field of Physical Optics. Was self-employed until 1965 as a consultant to various corporations, in the fields of electro-optical systems, servo mechanisms and photochemistry. Employed by IBM Research in 1965 to pursue studies in similar fields within IBM.

Donald E. Horne

Research Division, San Jose, California

B.S. General Studies in Physics, 1964; B.A. in Business Administration, 1967, both from Washington State University. Worked as a Research Scientist at the Granville Phillips Co., Boulder, Colorado, 1964-66. Joined IBM at the San Jose Research Laboratory in 1968, where he has worked on the design of laboratory equipment.

Bertram C. Johnson

Research Division, San Jose, California

B.S. in Electrical Engineering, 1965, Iowa State University; 1965-1966 at Iowa State University; 1966 to present studying for Ph.D. in Electrical Engineering at Stanford. Re-

ceived highest scholarship as student in Electrical Engineering from Iowa State in 1965; Boeing Company scholarship for the school year 1963-64; NBC scholarship 1964-65; NASA Fellowship 1965-66; Fairchild Fellowship at Stanford 1966-67. Joined IBM San Jose Research Laboratory in June 1967 as summer employee and part-time employee. Member, Tau Beta Pi, Beta Kappa Nu, Phi Beta Sigma.

Karl L. Konnerth

Thomas J. Watson Research Center, Yorktown Heights, New York

B.S. in Electrical Engineering, 1954; M.S., 1955; Ph.D., 1961, Carnegie-Mellon University, Pittsburgh. Was Instructor in the Electrical Engineering Department at Carnegie-Mellon 1958-59 and Assistant Professor 1961 through 1963. Joined IBM Research at Yorktown Heights in 1964 to work in Exploratory Device Group. Has been primarily interested in properties and applications of injection light sources. Member, IEEE, Sigma Xi, Tau Beta Pi and Eta Kappa Nu.

Tad Kuga

Research Division, San Jose, California

Studied Electrical Engineering at the University of Idaho. Taught electronics and radar at the Ordnance Guided Missile School in Huntsville, Alabama in 1958-1960. Joined IBM Research at San Jose in 1960 to develop an electron paramagnetic resonance spectrometer for low temperature studies. Currently participating in cooperative efforts to interface various spectrometers in the Molecular Physics Department with the IBM 1800 process control computer. Also doing paramagnetic resonance experiments on transition metal ions.

Theodore Kwap

Thomas J. Watson Research Center, Yorktown Heights, New York

B.S. in Electrical Engineering, 1962, Polytechnic Institute of Brooklyn. Joined General Precision Laboratory in 1953 and worked on solid state applications in digital systems. Joined Thomas J. Watson Research Center in 1963 to work on a variety of problems in digital data handling. Currently developing laboratory automation techniques pertaining to computer control. Member, Eta Kappa Nu and Tau Beta Pi.

Walter D. Loveland

Oregon State University, Corvallis, Oregon

S.B. in Chemistry, 1961, Massachusetts Institute of Technology; Ph.D. in Chemistry, 1966, University of Washington. Was Resident Research Associate in the Chemistry Division of Argonne National Laboratory, 1966-1967, where he worked on a number of problems concerning the physics and chemistry of nuclear fission. Joined the staff of the OSU Chemistry Department in 1967, where he is at present an Assistant Professor of Chemistry. His research interests involve studies of nuclear fission, statistical aspects of nuclear reactions, cosmochemistry and activation analysis. Member, American Physical Society, AAAS, Sigma Xi, Phi Lambda Upsilon.

Theodore R. Lusebrink

Data Processing Division, Scientific Center, Palo Alto, California

B.S. in Chemistry, 1950, University of Nevada; Ph.D. in Chemistry, 1965, University of California, Berkeley. Worked at Shell Oil Company Research, Martinez, California from 1952-57, fuel and lubricants research. Transferred to Shell

Development Company, Emeryville, California 1957-1962. Work there included studies in hydrocarbon stability and free radical reactions. Worked at Allied Chemical Laboratories 1965-67 on nuclear magnetic resonance (NMR) with particular emphasis on the use of computers for the analysis of NMR spectra. Joined the IBM Scientific Center, Palo Alto, in 1967 to work in the Laboratory Automation group.

Gilbert D. McCann

California Institute of Technology, Pasadena, California

B.S. in Electrical Engineering, 1934; M.S. in Electrical Engineering, 1935; Ph.D. in Electrical Engineering, 1939; all from the California Institute of Technology. During World War II was consulting engineer for Westinghouse Electric Manufacturing Division in Pittsburgh in charge of research on atmospheric electricity, computers and automatic control. Since 1946 has been on the faculty of the California Institute of Technology, specializing at first in research and education with computers and automation. Most recently has been engaged in the integration of the disciplines of computers and automation with life sciences research on living nervous systems. Is also director of the Willis H. Booth Computing Center. Author of a book and some 80 papers in the above general areas. Was the recipient of the Eta Kappa Nu Award for outstanding electrical engineer, 1942. Fellow, IEEE; member, SIAM, ACM, ASEE and Biomedical Engineering Society.

Martin Mikelsons

Thomas J. Watson Research Center, Yorktown Heights, New York

A.B. in Mathematics, 1964, Princeton University. Was Systems Programmer at Honeywell Programming Systems Division, 1965-66. Joined IBM Research at Yorktown Heights in 1966 to work on a joint study with Yale University. Designed and implemented a data acquisition programming system for the joint study and is currently working on a general laboratory automation multi-programming supervisor. Member, ACM.

James F. Mollenauer

Bell Telephone Laboratories, Inc., Murray Hill, New Jersey

B.A. in Chemistry, 1957, Amherst College; Ph.D. in Nuclear Chemistry, 1961, University of California, Berkeley. Research Associate at Brookhaven National Laboratory, 1961-1963, and Associate Chemist, 1963-1964. Research activities at Brookhaven in multiparticle nuclear reaction studies. These interests continued after joining Bell Laboratories in 1964, along with work in applications of computers to nuclear physics research. He is an Associate of the Graduate Faculty of Rutgers University and a member of the American Physical Society.

Yoshiharu Okaya

Chemistry Department, State University of New York, Stony Brook, New York

Ph.D. in Physical Chemistry, 1956, University of Osaka. Associate Professor of Physics, Pennsylvania State University (1958-1961) with research studies in crystal structure analysis. Joined IBM in 1961 and continued studies in crystal structure at the Thomas J. Watson Research Center until 1967, when he became Professor of Chemistry at the State University of New York at Stony Brook. He is working to establish the University's competence in crystallography and laboratory automation.

Helge Øverås

European Organization for Nuclear Research (CERN), Geneva, Switzerland

Diploma, 1953; licentiat, 1956; doctor's degree, 1961, in Applied Physics, Norwegian Institute of Technology, Trondheim. Research Fellow, same place, 1953-56. With CERN since 1956 and has mainly worked on beam transport, multiple scattering, experiment analysis and data handling problems; since 1963, has been in the data-handling group of the Nuclear Physics Division.

Haskell A. Reich

Research Division, Watson Laboratory, New York City, New York

B.S. in Physics, 1949, City College of New York; Ph.D. in Physics, 1955, Columbia University. Joined IBM Research at Watson Laboratory in 1955 to work in Low Temperature Physics. Visiting Lecturer, Department of Physics, University of California, Berkeley, 1962-63. Technical Assistant to Director of Research 1966. Currently active in research on solid helium III. Member, American Physical Society and Sigma Xi.

James F. Schofield

Data Processing Division, New Haven, Connecticut

B.S. in Physics, 1965, Yale. Joined IBM in 1965 as an Associate Systems Engineer in Hartford. Worked in the New Haven Branch Office on the Yale-IBM joint study until November, 1967.

Charles H. Sederholm

Data Processing Division, Scientific Center, Palo Alto, California

B.S. in Chemistry, 1955, University of California, Berkeley; Ph.D. in Physical Chemistry, 1959, Massachusetts Institute of Technology. Assistant Professor of Chemistry, University

of California at Berkeley 1959-65. Joined IBM Research in 1965, in residence at Palo Alto Scientific Center. Transferred to Data Processing Division and Scientific Center staff in 1968. Major interest within IBM has been automation of scientific experiments, including both low energy physics experiments and analytical chemical instruments. Author of the Palo Alto Laboratory System (PALS), a monitor system for the 1800 computer, designed specifically for automation of a laboratory.

Phillip D. Summers

Thomas J. Watson Research Center, Yorktown Heights, New York

B.S. in Humanities and Engineering, 1965, Massachusetts Institute of Technology. Was Associate Research Engineer at the Boeing Co., Seattle Washington, 1965-67. Joined IBM Research at Yorktown Heights in 1967 to work on a multi-programmed data acquisition system. Currently assigned to develop experimental languages for use in computerized laboratory environments. Member, ACM.

Norman P. Wilburn

Battelle Northwest, Richland, Washington

B.S. in Applied Chemistry, 1953; M.S. in Chemical Engineering, 1954; Ph.D. in Chemical and Electrical Engineering, 1958; all from California Institute of Technology. Was Senior Engineer with General Electric Company at the Hanford Laboratories in Richland, Washington until 1965 when Laboratories became Battelle-Northwest. Became Research Associate with Battelle-Northwest in 1966. Areas of professional interest are in mathematical modelling of chemical processes; real time computer applications, and optimal control of chemical processes by digital computer.